

## PRECIPITATION.

(Rainfall expressed in inches and hundredths.)

The distribution of rainfall over the United States and Canada, as determined from observations taken at more than six hundred stations, is exhibited on chart number iii. The table on the left-hand corner of this chart shows the average monthly rainfall, determined from the records of Signal Service stations, in the several districts, and the excess or deficiency as compared with the average of many years.

In New England and the middle Atlantic states, very heavy rains fell during the passage of low area iv., from the 22d to 24th, causing large excesses (5.47 and 5.50, respectively) in those districts. In the southern slope, an excess of 1.59 has occurred. Small excesses are reported from the Ohio valley, west Gulf states, northern slope, and middle Pacific coast region. The region of greatest deficiency embraces the upper lake region, the upper Mississippi and Missouri valleys, where they amount to 1.94, 2.57 and 2.15, respectively. In the Rio Grande valley, there has been a deficiency of 1.06. Deficiencies less marked have occurred in the south Atlantic and east Gulf states, Florida, lower lake region, extreme northwest, southern plateau and in the north and south Pacific coast regions. On the summit of Mount Washington, the monthly rainfall was 13.32, or 4.61 in excess of the September average at that station. At Denver and on the summit of Pike's Peak, the monthly rainfalls were 0.06 and 0.39, or 0.91 and 1.93 below the normal, respectively.

## DEVIATIONS FROM AVERAGE PRECIPITATION.

Under this heading, departures exhibited by the regular Signal Service stations, are shown in the table of comparative monthly rainfalls, as published in the lower left-hand corner of chart number iii. The following items of interest in connection with this subject are reported by voluntary observers:

*Illinois:* Riley, monthly rainfall, 2.36, or 1.71 below the September average of the past twenty-one years.

*Indiana:* Vevay, monthly rainfall, 2.85, or 0.71 below the September average of the past seventeen years.

*Iowa:* Clinton, monthly rainfall, 1.34, or 1.85 below the September average.

*Kansas:* Lawrence, monthly rainfall, 1.55, or about one-half of the September average of the past fourteen years. During that period, the largest September rainfall, 6.45, occurred in 1874; the smallest, 1.35, occurred in 1877. Wellington, monthly rainfall, 3.87, or 1.14 below the September average of the past three years. The largest September rainfall, 11.19, occurred in 1881; the smallest, 1.34, occurred in 1880. Yates Centre, monthly rainfall, 1.98, or 2.43 below the September average of the past two years.

*Maine:* Gardiner, monthly rainfall, 7.00, or 3.78 above the September average of the past forty-six years. The total rainfall for the three months ending September 30th, is 9.94, or 1.02 below the average of the corresponding months of the past forty-six years.

*Maryland:* Fallston, monthly rainfall, 8.63, or 4.03 above the September average of the past twelve years. During that

period, the largest September rainfall, 12.95, occurred in 1876; the smallest, 1.21, occurred in 1881.

*Massachusetts:* Westborough, monthly rainfall, 8.12, is unusually heavy and has been exceeded in but two months during the past eight years, viz: 8.50 in July, 1876, and 8.79 in March, 1877.

*Missouri:* Saint Louis, the Missouri Weather Service reports the rainfall for the month to be about 1.00 inch below the normal in central Missouri, while in the southwest and central northern parts of the state there has been an excess.

*New Hampshire:* Antrim, monthly rainfall, 9.40 or 6.34 above the September average of the past ten years, and the largest monthly precipitation that has occurred during that period. The precipitation for March, 1876, (the next largest) was 8.15, and the largest September rainfall of the past ten years, 6.70, occurred in 1876. Grafton, monthly rainfall, 10.70, or 7.77 above the September average of the past three years. Contoocookville, monthly rainfall, 7.60, or 4.35 above the September average of the past twelve years, and is the largest monthly precipitation that has occurred during that period, with the exception of August, 1878.

*New Jersey:* Paterson, monthly rainfall, 25.90, is unprecedented in this locality.

*New York:* Waterburg, monthly rainfall, 1.26 or 1.49 below the September average of the past ten years. North Volney, monthly rainfall, 2.75 or 0.18 below the September average of the past ten years. During that period the largest September rainfall, 4.65, occurred in 1876; the smallest, 1.42, occurred in 1881. Palermo, monthly rainfall, 1.80, or 1.10 below the September average of the past twenty years. During that period the largest September rainfall, 7.30, occurred in 1866; the smallest, 1.00, occurred in 1880.

*Vermont:* Woodstock, monthly rainfall, 6.77, or 3.48 above the September average of the past fourteen years.

*Virginia:* Wytheville, the total precipitation from January 1st, to September 30th, 1882, is 45.50, or 12.00 above the average of the same months during a period of seventeen years.

*West Virginia:* Helvetia, monthly rainfall, 7.04, or 2.98 above the September average of the past six years.

The following table shows the total precipitation for each five years, from 1837 to 1881, inclusive, with the annual averages for the several periods, at New York City:

	Total.	Annual averages.
Precipitation from 1837 to 1841.....	222.20	44.44
" " 1842 " 1846.....	193.72	38.74
" " 1847 " 1851.....	227.92	45.58
" " 1852 " 1856.....	223.53	44.70
" " 1857 " 1861.....	240.38	48.08
" " 1862 " 1866.....	271.85	54.37
" " 1867 " 1871.....	269.28	53.86
" " 1872 " 1876.....	199.90	39.98
" " 1877 " 1881.....	215.57	43.11

The annual extremes, 27.57 and 65.51, occurred in 1836 and 1837, respectively. In 1847, 64.85; and in 1868, 64.03 inches fell. The mean annual precipitation for the forty-six years ending with 1881, is 45.48.

Rainfall at San Francisco, from July, 1849, to June, 1877, inclusive.

	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	1858.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	Monthly averages for 28 years.
	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	Amt.	
January.....	8.34	0.72	0.58	3.92	3.85	3.67	9.40	2.45	4.36	1.28	1.64	2.47	24.36	3.63	1.83	5.14	10.88	5.16	9.50	6.35	3.89	3.07	4.22	2.17	4.86	6.97	6.41	4.36	5.196	
February.....	1.77	0.84	0.14	1.42	8.04	4.77	0.50	8.59	1.83	6.32	0.60	3.72	7.53	3.19	0.00	1.04	2.12	7.20	6.13	3.99	4.78	3.76	6.97	4.24	1.83	0.20	3.96	1.14	3.448	
March.....	4.53	1.94	6.68	4.56	8.51	4.64	1.60	1.62	5.53	3.02	3.99	4.05	2.20	2.06	1.52	0.74	3.04	1.58	6.30	3.14	2.00	1.29	1.64	0.78	3.55	1.08	4.37	0.91	3.115	
April.....	0.46	1.23	0.26	5.37	3.12	5.00	2.94	0.00	1.55	0.27	3.14	0.51	0.73	1.01	1.57	0.84	0.12	2.36	2.31	2.19	1.53	1.93	1.10	0.52	1.04	0.02	1.04	0.25	1.518	
May.....	0.00	0.67	0.32	0.38	0.02	1.88	0.78	0.02	0.34	1.55	2.86	1.00	0.74	0.26	0.78	1.83	1.46	0.00	0.03	0.08	0.20	0.21	0.16	0.01	0.34	0.11	0.18	0.00	0.535	
June.....	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.03	0.12	0.05	0.00	0.09	0.08	0.05	0.00	0.00	0.04	0.00	0.23	0.02	0.00	0.00	0.00	0.02	0.08	0.06	1.01	0.02	0.00	0.071
July.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.06	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.011	
August.....	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.05	0.16	0.02	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.024	
September.....	0.00	0.33	1.03	0.00	0.46	0.15	0.00	0.07	0.00	0.00	0.03	0.00	0.02	0.00	0.03	0.01	0.24	0.11	0.04	0.00	0.12	0.03	0.03	0.14	0.00	0.83	0.00	0.26	0.140	
October.....	3.14	0.00	0.21	0.80	0.12	2.41	0.00	0.45	0.93	2.74	0.05	0.19	0.00	0.40	0.00	0.13	0.26	0.00	0.20	0.15	1.29	0.00	0.11	0.21	0.63	2.73	0.22	0.69	0.647	
November.....	8.66	0.92	2.12	5.31	2.28	0.34	0.67	2.79	3.01	0.89	7.28	0.58	4.10	0.15	2.55	6.68	4.19	3.35	3.41	1.18	1.19	0.43	3.72	2.02	1.31	5.92	6.73	0.23	2.943	
December.....	6.20	1.05	7.10	13.20	2.32	0.61	5.76	3.75	4.14	6.14	1.57	6.16	9.54	2.35	1.80	3.91	0.58	15.16	10.69	4.34	4.91	3.38	16.74	7.26	10.12	0.28	3.08	0.00	0.00	5.597
Sums.....	*18.00	17.40	15.66	27.29	21.17	27.37	26.39	22.31	20.93	23.46	21.39	19.46	25.52	38.51	14.93	21.64	14.06	36.28	30.64	30.17	22.59	16.24	30.86	24.33	20.09	21.45	19.42	17.19	*6.66	†23.247
MONTHLY MEANS	*3.00	1.45	1.30	2.27	1.76	2.28	2.20	1.86	1.74	1.95	1.78	1.62	2.13	3.21	1.21	1.80	1.18	3.02	2.55	2.51	1.88	1.35	2.57	2.03	1.67	1.79	1.62	1.43	*1.11	†1.937

\* Sums and means for six months.

† Annual averages for a period of twenty-eight years.

‡ Monthly averages for a period of twenty-eight years.

The above table is based upon data taken from the "Annual Report and Statistics of the Meteorology of Oakland, California," for 1881, published by J. B. Trembly, M. D., and will be found interesting as showing the monthly and annual precipitation with the monthly and annual means for a period of twenty-eight years. During the period covered by the record, the largest annual rainfall, 38.51, occurred in 1862; the smallest, 14.53 and 14.06, occurred in 1863 and 1865, respectively. The largest monthly rainfall, 24.36, occurred in January, 1863. Monthly rainfalls exceeding 10.00 occurred as follows: 13.20, December, 1852; 10.88, January, 1866; 15.16, December, 1866; 10.69, December, 1869; 16.74, December, 1871; and 10.12, December, 1873.

The following table shows the greatest and least numbers of rainy and cloudy days, and percentages of mean relative humidity, as reported from the various districts during the month of September:

Table of rainy and cloudy days and relative humidity for September 1882.

Districts.	Rainy days	Cloudy days.	Relative humidity. *
			Percentages.
New England.....	From 18 to 19	From 5 to 14	From 72.6 to 84.7.
Middle Atlantic states.....	" 7 " 17	" 6 " 18	" 73.0 " 82.6.
South Atlantic states.....	" 7 " 14	" 4 " 11	" 73.4 " 85.1.
Florida peninsula.....	" 9 " 14	" 1 " 6	" 73.2 " 76.7.
East Gulf states.....	" 5 " 8	" 2 " 5	" 71.2 " 79.6.
West Gulf states.....	" 6 " 12	" 1 " 6	" 71.7 " 82.3.
Rio Grande valley.....	" 1 " 9	" 0 " 6	" 59.4 " 65.3.
Ohio valley and Tennessee.....	" 4 " 15	" 3 " 9	" 65.9 " 81.0.
Lower lake region.....	" 8 " 13	" 3 " 8	" 71.5 " 75.6.
Upper lake region.....	" 5 " 15	" 3 " 11	" 71.1 " 80.1.
Extreme northwest.....	" 7 " 10	" 6 " 6	" 68.3 " 74.9.
Upper Mississippi valley.....	" 4 " 10	" 3 " 7	" 67.2 " 78.3.
Missouri valley.....	" 3 " 9	" 1 " 9	" 69.0 " 73.9.
Northern slope.....	" 1 " 10	" 1 " 12	" 35.2 " 69.7.
Middle slope.....	" 1 " 13	" 0 " 3	" 39.6 " 78.0.
Southern slope.....	" 4 " 10	" 2 " 6	" 64.8 " 76.6.
Southern plateau.....	" 1 " 7	" 0 " 3	" 42.9 " 57.2.
Middle plateau.....	" 3 " 5	" 2 " 6	" 31.5 " 39.0.
Northern plateau.....	" 5 " 9	" 4 " 7	" 45.6 " 57.4.
North Pacific coast region.....	Five	" 2 " 4	" 63.0 " 74.0.
Middle Pacific coast region.....	" 1 " 2	" 1 " 3	" 69.4 " 81.4.
South Pacific coast region.....	" 0 " 3	" 0 " 3	" 41.6 " 78.2.

\* Relative humidity corrected for altitude.

Table of Excessive, Greatest and Least Monthly Rainfalls.

STATION.	SPECIAL HEAVY.			Largest Monthly.	SMALLEST MONTHLY.	
	Date.	Amt.	Duration	Amount.	STATION.	Amt.
<i>Alabama.</i>					<i>Alabama.</i>	
Troy.....	7, 8	9.34		10.25	Tuscaloosa.....	0.05
Auburn.....				7.93	Talladega.....	0.31
Mobile.....	8, 9	3.87			Calera.....	0.32
Montgomery.....	9, 10	4.49			<i>Arizona.</i>	
<i>Connecticut.</i>					Casa Grande.....	0.00
New Haven.....	11, 12	4.26		13.43	Maricopa.....	0.00
Do.....	21 to 24	7.13			Pantano.....	0.00
Southington.....				10.13	Yuma.....	0.04
New London.....	11, 12	4.93		8.99	San Simon.....	0.26
<i>District of Columbia</i>					Camp Thomas.....	0.28
Washington.....				7.84	Tucson.....	0.32
<i>Florida.</i>					<i>Arkansas.</i>	
Fort Barrancas.....	8, 9	7.85	27 hrs.	11.82	Brinkley.....	0.19
Cedar Keys.....	6	6.97		9.37	<i>California.</i>	
Pensacola.....	9	4.87		8.49	Anaheim.....	0.00
Mayport.....	8, 9	3.30		8.82	Borden.....	0.00
Saint Augustine.....	8, 9	3.66	13hr.30m.	7.98	Caliente.....	0.00
Key West.....				6.16	Colton.....	0.00
<i>Georgia.</i>					Indio.....	0.00
Smithville.....	8 to 10	8.04		8.79	Keene.....	0.00
Macon.....	10	6.80		8.18	Lemoore.....	0.00
Milan.....	7	4.82		8.00	Mammoth Tank.....	0.00
Allapaha.....	9, 10	6.98		7.69	Martinez.....	0.00
Savannah.....				7.42	Mojave.....	0.00
Eastman.....	8, 10	4.57		6.50	Newhall.....	0.00
Thomasville.....	10	3.98		6.37	Pajaro.....	0.00
Jesup.....	8, 9, 10	4.25		9.13	San Fernando.....	0.00
Madison.....	10	5.34			Spadra.....	0.00
Athens.....	10	4.40			Solidad.....	0.00
Fort Gaines.....	10	3.73			South Valejo.....	0.00
Columbus.....	9, 10	3.80			Suisun.....	0.00
Griffin.....	10	3.69			Sumner.....	0.00
Union Point.....	10	3.49			Tehachapi.....	0.00
West Point.....	10	3.43			Whitewater.....	0.00
Ovington.....	10	3.30			Willows.....	0.00
Noonan.....	10	3.04			Los Angeles.....	0.01
Calhoun.....	10	2.57			San Diego.....	0.01
<i>Indian Territory.</i>					Campo.....	0.02
Fort Sill.....	6	2.47			Brentwood.....	0.02
<i>Louisiana.</i>					Byron.....	0.02
Port Eads.....	8, 9	5.90		6.80	Rockland.....	0.03
<i>Maine.</i>					Poway.....	0.04
Cornish.....	23, 24	3.90		8.04	San Jose.....	0.04

Table of Excessive, Greatest and Least Monthly Rainfalls—Continued.

STATION.	SPECIAL HEAVY.			Largest Monthly.	SMALLEST MONTHLY.	
	Date.	Amt.	Duration	Amount.	STATION.	Amt.
Fort Preble.....	5	2.90		7.73	Delano.....	0.05
Portland.....	23, 24	4.20		7.58	Galt.....	0.05
Gardiner.....				7.00	Ione.....	0.06
Dexter.....	24	2.90		6.49	Tehama.....	0.08
Oroon.....				6.44	Turlock.....	0.11
<i>Maryland.</i>					Antioch.....	0.13
Fort McHenry.....	22, 23	2.87		9.88	Oakland.....	0.14
Baltimore.....				9.38	Tuohy's Rancho.....	0.16
Fallston.....				8.63	Princeton.....	0.18
Woodstock.....	10	2.70	7hrs.15m.	8.44	Saa Mateo.....	0.18
Owning's Mills.....				6.41	Alcatraz Island.....	0.19
Emmitsburg.....	10, 11	3.00			Tracy.....	0.20
<i>Massachusetts.</i>					Williams.....	0.20
Springfield.....	21 to 24	8.68		12.73	Cape Mendocino.....	0.21
Amherst.....	21 to 24	7.79		11.85	Monterey.....	0.22
Boston.....	21 to 23	6.28		10.93	Menlo Park.....	0.23
Menden.....				10.70	Angel Island.....	0.25
South Lee.....				10.08	Kingsburg.....	0.25
Milton.....	11, 12	3.35		10.05	San Francisco.....	0.26
Do.....	21 to 23	4.54			Brighton.....	0.28
Charlestown.....	11, 12	3.09	25 hrs.	9.85	Tulare.....	0.29
Princeton.....				9.85	Farmington.....	0.30
Rowe.....	21 to 23	5.45		9.70	Benetia Barracks.....	0.32
Fort Warren.....	23	3.24		9.14	Fresno.....	0.34
Westborough.....	11, 12	8.15	21hr.30m.	8.12	Livermore.....	0.34
Do.....	20 to 24	4.01			Petaluma.....	0.35
Fall River.....	11, 12	3.45		7.50	Stockton.....	0.35
Williamstown.....				7.04	Point San Jose.....	0.36
Somerset.....				7.03	Presidio.....	0.36
Provincetown.....				6.39	Salinas City.....	0.38
New Bedford.....				6.26	Colfax.....	0.40
<i>Michigan.</i>					Dunnigan.....	0.42
Northport.....	18, 19	2.35	18 hrs.	8.37	Niles.....	0.44
Marquette.....	14	2.32	3hrs.15m.		Hollister.....	0.45
<i>Missouri.</i>					Fort Bidwell.....	0.48
Protem.....	1	2.96			<i>Colorado.</i>	
<i>Montana.</i>					West Las Animas.....	0.06
Fort Shaw.....	17, 18	3.46			Denver.....	0.06
<i>New Hampshire.</i>					Pike's Peak.....	0.39
Mount Washington.....	14, 15	5.08		13.32	Fort Garland.....	0.42
Do.....	21 to 24	5.13			<i>Dakota.</i>	
Grafton.....	21 to 24	5.28		10.70	Yankton.....	0.07
Auburn.....	21 to 24	6.00		10.00	Fort Meade.....	0.26
Bristol.....	23	2.70		9.87	Wicklow.....	0.27
Antrim.....	21 to 24	5.08		9.40	Fort Totten.....	0.35
Ashland.....	23	2.07		8.85	Fort Sisseton.....	0.36
Wier's Bridge.....	21 to 24	4.78		8.09	Olivet.....	0.37
Lake Village.....	21 to 24	4.79		7.88	Fort Hale.....	0.40
Woodstock.....	21 to 24	3.39		7.73	Fort Randall.....	0.60
New Market.....				7.72	Rapid City.....	0.60
Contoocookville.....				7.60	<i>Idaho.</i>	
Wolfboro.....	24	2.60		7.42	Coeur d'Alene.....	0.08
Belmont.....	24	3.10		7.35	<i>Indiana.</i>	
<i>New Jersey.</i>					Logansport.....	0.24
Paterson.....	21 to 23	17.90	69 hrs.	25.98	Lafayette.....	0.30
Barneget.....	11, 12	9.52		14.65	Wabash.....	0.39
South Orange.....	23, 23	7.50	13 hrs.	14.45	<i>Iowa.</i>	
Do.....	20 to 24	11.02			Dana.....	0.07
Atco.....	11, 12	4.88		13.65	Des Moines.....	0.15
Do.....	21 to 23	5.45			Logan.....	0.20
Bordentown.....	22, 23	7.35		13.15	<i>Michigan.</i>	
Pegannock.....	21 to 24	9.94		12.89	Battle Creek.....	0.38
Vineland.....	10, 11, 12	6.06	32 hrs.	12.35	<i>Minnesota.</i>	
Do.....	21 to 26	6.09			Minneapolis.....	0.15
Readington.....	21 to 23	9.00		12.30	Saint Paul.....	0.27
Moorestown.....	22, 23	6.96		11.71	Northfield.....	0.46
Freehold.....	22, 23	6.55		11.61	Fort Snelling.....	0.47
Sandy Hook.....	11, 12	4.77		11.48	<i>Mississippi.</i>	
Do.....	21 to 23	4.37			Waynesborough.....	0.18
Somerville.....	22, 23	7.69		11.05	Okolona.....	0.21
Little Egg Harbor.....	11, 12	4.07		7.15	<i>Missouri.</i>	
Cape May.....	11	4.85		7.05	Phelps City.....	0.15
Phillipsburgh.....	21 to 23	4.57		6.58	Corning.....	0.40
Atlantic City.....	11	3.21			<i>Nebraska.</i>	
<i>New York.</i>					Lincoln.....	0.25
Fort Columbus.....	11, 12	3.93		15.43	North Platte.....	0.28
Do.....	21 to 24	9.60			Fremont.....	0.37
New York City.....	11, 12	3.38		14.51	De Soto.....	0.38
Do.....	22, 23	7.86			Clear Creek.....	0.47
West Point.....	22, 23	9.80		13.60	<i>Nevada.</i>	
Flushing.....	23, 24	5.27		11.71	Boca.....	0.00
Ardenia.....	20 to 23	8.10			Reno.....	0.00
Fort Hamilton.....	20 to 24	5.04		9.67	Toano.....	0.00
White Plains.....	23	3.35	21 hrs.	9.75	Wadsworth.....	0.00
Albany.....	22, 23	4.16		7.79	Elko.....	0.03
Port Jervis.....	22, 23	3.99		6.97	Humboldt.....	0.25
<i>North Carolina.</i>					Orega.....	0.25
Portsmouth.....				8.97	Wells.....	0.28
Lenoir.....				8.40	Hallock.....	0.34
Kittyhawk.....	29	3.40		7.81	Carson City.....	0.40
Hatteras.....				7.67	Hot Springs.....	0.44
New River Inlet.....				7.00	<i>New Mexico.</i>	
Fort Macon.....				6.83	Lordsburg.....	0.00
Weldon.....				6.63	Deming.....	0.32
Charlotte.....	11	3.64			<i>Oregon.</i>	
<i>Pennsylvania.</i>					Albany.....	0.41
Fallsington.....	20 to 24	8.66		12.35	<i>Texas.</i>	
Philadelphia.....	21 to 23	10.09		12.09	Long View.....	0.03
West Chester.....	22, 23	4.55		7.23	Corsicana.....	0.14
Erie.....	21, 22	3.67			Rio Grande City.....	0.28
<i>Rhode Island.</i>					El Paso.....	0.40
Newport.....	11	2.87		6.57	Eagle Pass.....	0.46
<i>South Carolina.</i>					<i>Utah.</i>	
Saint Mathews.....	4	3.38		7.00	Terrace.....	0.00
Charleston.....	22	1.00	68 m.		Ogden.....	0.27

Table of Excessive, Greatest and Least Monthly Rainfalls.—Continued.

STATION.	SPECIAL HEAVY.			Largest Monthly.	Smallest Monthly.	
	Date.	Amt.	Duration		STATION.	Amt.
<i>Tennessee.</i>						
Chattanooga.....	8	1.10	1hr.30m.		Salt Lake City.....	0.37
<i>Texas.</i>					Washington territory.	
Denison.....				9.04	Almota.....	0.08
San Antonio.....	6	6.20		8.95	Fort Townsend.....	0.16
Waco.....				7.67	<i>Wisconsin.</i>	
Sour Lake.....	15, 16	6.10		7.58	Franklin.....	0.06
Fort Stockton.....	4, 5	6.56		6.81	<i>Wyoming.</i>	
Indianola.....	6	4.05		6.13	Cheyenne.....	0.35
Jacksboro.....				6.04	Fort Bridger.....	0.40
Huntsville.....	6, 7	3.11			Fort Washakie.....	0.46
Fort Ocho.....	4, 5	3.05	19 hrs.			
Luling.....	7	2.64				
Camp near Presidio.....	4, 5	2.68	24 hrs.			
Fort Elliott.....	27	1.17	40 m.			
<i>Vermont.</i>						
Charlotte.....				7.50		
Newport.....				7.22		
Woodstock.....				6.47		
Stratford.....				6.30		
<i>Virginia.</i>						
Lynchburg.....	26, 27	3.44		8.37		
Norfolk.....	23, 26	4.85		8.07		
Variety Mills.....	10, 11	2.72		7.18		
Cape Henry.....	25, 26	3.95				
<i>West Virginia.</i>						
Morgantown.....				7.23		
Helvetia.....				7.04		

## HAIL.

Lancaster, Pennsylvania, 9th: A most destructive rain and hail storm passed over the southwest section of this county last night. Fields of tobacco ready for cutting were practically ruined, and the leaf can now only be used for fillings. It is estimated that the amount of damage caused will be considerably more than \$50,000. The corn crop also sustained some damage.

Springfield, Massachusetts, 8th: Severe storms, accompanied by hail, visited South Deerfield, Whateley and Sunderland, during the afternoon, doing an immense amount of damage to the unharvested tobacco crop. It is estimated that the damage in each of the towns will be about \$15,000.

Anna, Illinois, 29th: Hail storm of considerable severity occurred about ten miles west of this place; many of the hailstones remained on the ground until the following day. No serious damage resulted.

Hillsdale, Michigan, 17th: Hail of considerable size fell a few miles south of this place, damaging corn to some extent.

Hail was also reported by the following stations:

Mount Washington, New Hampshire, 11th.

Morgantown, West Virginia, 21st.

Oswego, New York, 19th.

Milwaukee, Wisconsin, 9th.

Alpena, Michigan, 17th.

Deadwood, Dakota, 21st.

Fort Benton, Montana, 28th.

Fort Supply, Indian territory, 27th.

Fort Elliott, Texas, 27th.

Winnemucca, Nevada, 16th.

Mission, Idaho, 11th, 24th.

Fort Bidwell, California, 30th.

Creswell, Kansas, 27th.

Wellington, Kansas, 27th.

Russell, Kansas, 27th.

Charlestown, Massachusetts, 8th.

Clinton, Missouri, 28th.

College Hill, Ohio, 8th.

Dyberry, Pennsylvania, 8th.

Meadville, Pennsylvania, 19th.

## SNOW.

Snow fell at the various stations during the month as follows:

Fort Stevenson, Dakota, 30th: Scattering snow-flakes fell with rain from 10:00 a. m. to 12:00 m.

Fort Washakie, Wyoming, 18th: Heavy snow fell on the mountains near station, during the day; 29th, light snow fell from 1:00 to 7:00 a. m.

New Chicago, Montana, 28th: Light snow fell at intervals during the morning.

Deer Lodge, Montana, 28th.

Pioche, Nevada, 16th: Large snow-flakes fell, with rain, during the day; 17th, light snow from 9:40 to 10:30 a. m.

Eagle Rock, Idaho, 17th: Mountains and foot-hills covered with snow.

Emigrant Gap, California, 16th: Snow has fallen to a depth of four inches.

Reno, Nevada, 16th: The first snow of the season fell in the mountains, eight miles southwest of station, last night.

Fort Shaw, Montana, 29th.

Fort Ellis, Montana, 19th, 27th.

Fort Assiniboine, Montana, 28th.

Helena, Montana, 29th.

Pike's Peak, Colorado, 1st, 2d, 4th, 5th, 7th, 11th, 19th, 22d, 26th, 27th.

Fort Lapwai, Idaho, 29th.

Fort Buford, Dakota, 30th.

Fort Maginnis, Montana, 18th, 28th, 29th.

Fort Bridger, Wyoming, 17th, 26th.

Fort Klamath, Oregon, 30th.

Mount Washington, New Hampshire, 29th.

Tobacco Garden, Dakota, 30th.

## SLEET.

Fort Shaw, Montana, 28th.

Pike's Peak, Colorado, 1st, 2d.

Santa Fé, New Mexico, 4th.

## COTTON REGION REPORTS.

The following table shows the average rainfall, mean of maximum and mean of minimum temperatures, for the month of September, 1882, in each of the cotton districts as shown on chart vi., issued with the April REVIEW.

Meteorological Record for the Cotton Districts for the month of September, 1882.

DISTRICTS.	Average rainfall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	2.64	86.7	67.7
Savannah.....	4.94	87.1	67.2
Charleston.....	4.73	84.8	64.9
Atlanta.....	3.16	82.3	62.3
Wilmington.....	3.49	81.7	62.8
Memphis.....	1.69	82.7	60.3
Galveston.....	3.50	86.8	64.8
Vicksburg.....	1.73	85.3	61.7
Montgomery.....	3.10	84.3	62.0
Augusta.....	4.43	83.9	61.4
Little Rock.....	2.32	83.3	59.0
Mobile.....	1.39	86.4	62.8

## WINDS.

The prevailing direction of the winds during the month of September, 1882, at Signal Service stations are shown on chart number ii., by arrows flying with the wind. It will be seen from the chart that the prevailing winds along the Atlantic coast were mostly from the north and northeast; in the lower lake region they were from the northeast and east, except southwest at Toledo; in the Ohio valley, Tennessee and the Gulf states, from northwest to northeast; in the upper Mississippi and Missouri valleys, from the south and southeast; they were variable in the Rocky mountain regions; and on the Pacific coast, from north to west.

## TOTAL MOVEMENTS OF THE AIR.

[In miles.]

The following are the largest total movements at the Signal Service stations: On the summit of Mount Washington, 21,771; Block Island, Rhode Island, 12,011; Sandy Hook, 11,971; Hatteras, North Carolina, 11,622; Kittyhawk, North Carolina, 11,193; Barnegat, New Jersey, 11,140; Portsmouth, North Carolina, 11,023; Cape May, New Jersey, 9,968; Cape Henry, Virginia, 9,292; Cape Mendocino, California, 9,225; Galveston, Texas, 9,153; Indianola, Texas, 9,151; Port Eads, Louisiana, 8,936; Sandusky, Ohio, 8,575; Fort Macon, North Carolina, 8,540; Moorhead, Minnesota, 8,351; Pike's Peak, Colo-